

Asthma Brief

What is Asthma?

Asthma is a chronic inflammatory disease of the respiratory system in which the airways of the lungs constrict and become inflamed in response to certain triggers. It is the most common long-term disease in children, but is also found in adults.¹ About 23 million Americans, nearly 7 million of whom are children, have asthma.²

Asthma causes wheezing, breathlessness, chest tightness, and nighttime or early morning coughing. “Asthma attacks” happen when a trigger causes the sides of the airways in the lungs to swell, and the airways shrink.¹ Less air gets into the lungs, and the person has difficulty breathing. Very severe attacks can be fatal.

Asthma triggers include¹:

- Tobacco smoke
- Dust mites
- Pets
- Cockroaches and other pests
- Mold
- Outdoor air pollution

Asthma can be controlled and the likelihood of an attack can be minimized by following an asthma management plan, avoiding triggers, and recognizing the warning signs of an attack.

Warning signs of an asthma attack¹:

- Difficulty breathing,
- Shortness of breath,
- Severe wheezing when breathing both in and out,
- Coughing with asthma that won't stop,
- Very rapid breathing,
- Chest pain or pressure,
- Tightened neck and chest muscles, called retractions,
- Difficulty talking or performing normal daily tasks,
- Feelings of anxiety or panic,
- Pale, sweaty face,
- Blue lips or fingernails,
- Or worsening symptoms despite use of medications.

Risk Factors for Asthma

Demographic Risk Factors

- *Race / Ethnicity*
 - Blacks are at greater risk for asthma than other racial/ethnic groups.

- *Genetics or Family History*
 - Asthma is associated with multiple genes which interact with environmental factors to influence the onset and severity of the disease.³
 - If one parent has asthma, children have a 1 in 3 chance of having the disease. If both parents have asthma, children have a 7 in 10 chance of having the disease.⁴
- *Age*
 - Children are diagnosed with asthma more often than adults.⁴
 - Individuals over the age of 65 years account for nearly 60% of asthma deaths.⁴
- *Gender*
 - Among adults, females are more often diagnosed with asthma than males.⁴

Social and Behavioral Risk Factors

- *Low Birth Weight*
 - Low birth weight is associated with a higher risk for asthma.⁵
 - Infants with birth weights of less than 2500g may have a higher risk of asthma during childhood and adolescence than larger infants.⁶
- *Living in Polluted Areas*
 - Ozone, nitrogen dioxide, acid aerosols, particulate matter, and elemental carbon have been associated with impaired breathing in children with asthma.⁷
 - Exposure to air pollution has long-term effects on lung development in children.⁷
 - Children who played three or more sports in areas with high ozone concentrations were more than three times as likely to develop asthma as sedentary children.⁸
- *Obesity*
 - Asthma incidence is about 1.5 times higher among overweight American children than among children who are not overweight.⁹

Intermediate Outcomes

- *Atopic Dermatitis* (chronic inflammation of the skin)
 - In the United States, 50-80% of patients with atopic dermatitis either has or develops asthma.¹⁰
- *Allergic Rhinitis* (hay fever)
 - Among Americans, those with allergic rhinitis are three times more likely to develop asthma than those without allergic rhinitis.¹¹
 - In the United States, children who develop allergic rhinitis within the first year of life are twice as likely to develop asthma as those who develop allergic rhinitis later in life.¹¹
- *Premature or Low Birth Weight Infants*
 - Women who have asthma are more likely to give birth to infants who are premature or have a low birth weight.¹²

National Statistics and Disparities

Statistics

- In 2003, 1.4 per 100,000 Americans died from asthma.²
- About 12 million Americans reported at least one asthma attack in the previous year.²
- Asthma is responsible for 17 million of all hospital and physician office visits and 2 million emergency department visits each year in the United States.²
- Nationally, about 10% of all school-aged children have asthma.²

Disparities

- In the U.S., blacks are three times more likely to be hospitalized or die for asthma.¹³
- Nationally, Puerto Ricans had an asthma prevalence rate 125% higher than non-Hispanic whites and 80% higher than non-Hispanic blacks in 2005.¹³
- In 2005, women had a 20% greater likelihood of having ever been diagnosed than men, but girls were less likely than boys to have been diagnosed with asthma.¹³
- Women have a 45% higher asthma mortality rate than men in the United States.¹³

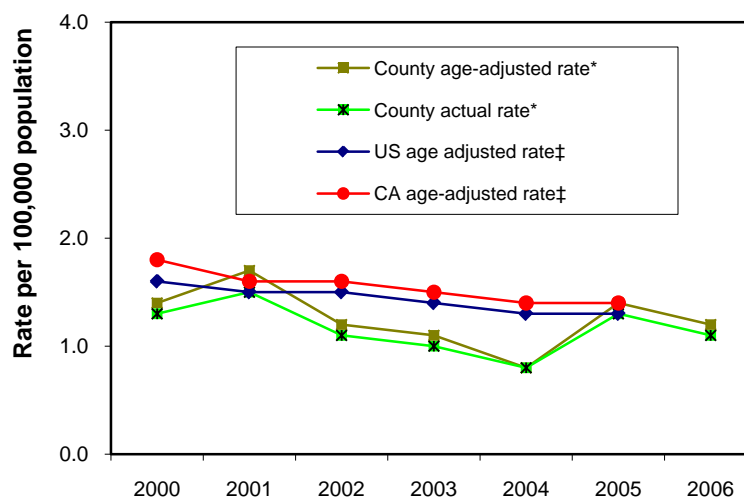
Cost

- Asthma costs the United States almost \$18 billion annually.²
- In 2003, nearly 13 million school days were lost due to asthma among children in the U.S. who previously had at least one asthma attack.²

Local Statistics and Disparities

- In 2005, 12.4% of San Diego County residents reported ever being diagnosed with asthma.¹⁴
- In 2005, of San Diego County residents who reported ever being diagnosed with asthma, 8.7% reported symptoms every week and 10.6% reported symptoms daily.¹⁴
- In 2005, 65.7% of asthmatic San Diego County residents had symptoms within the past 12 months.¹⁴

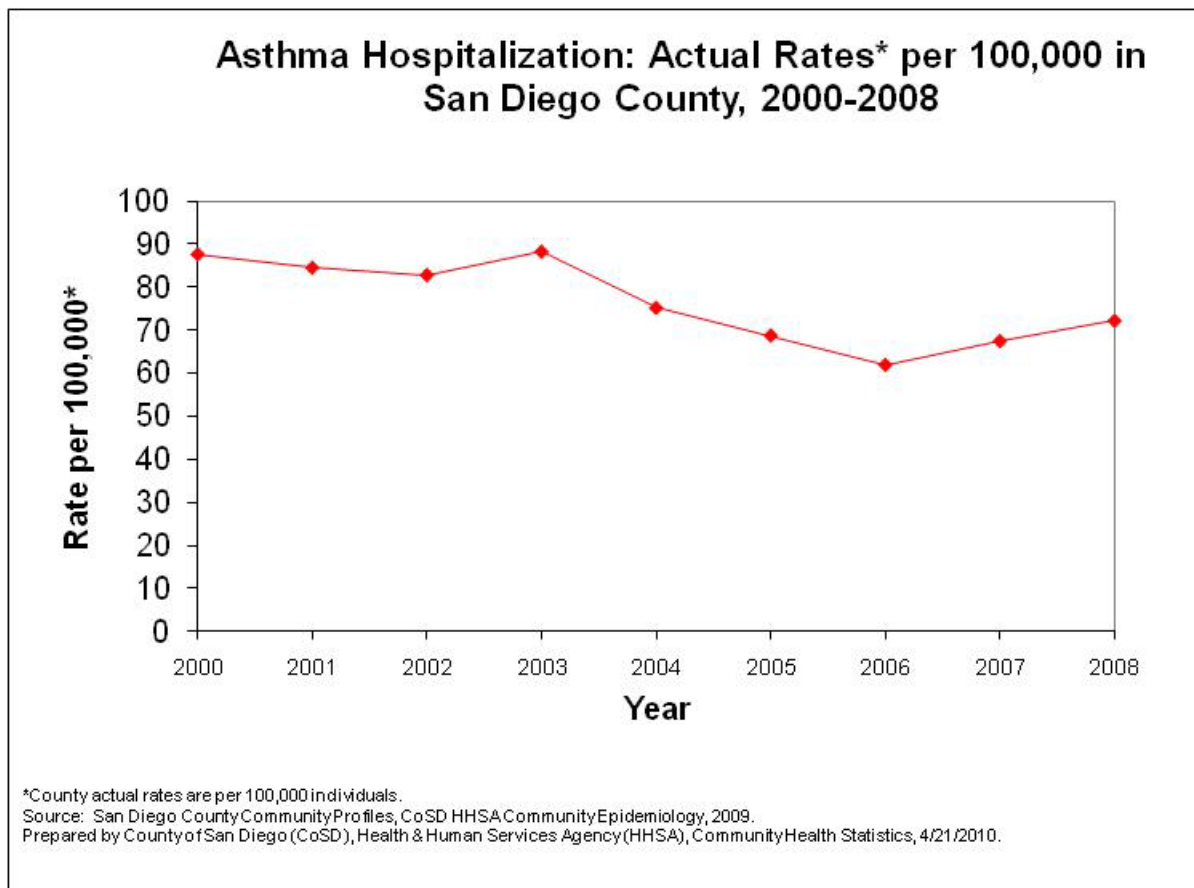
Asthma Death Rates per 100,000 Population, In San Diego County, California and United States, 2000-2006



* Source: Death Statistical Master Files (CA DPH), CoSD, HHSA, Community Epidemiology 2000-2006; SANDAG, Current Population Estimates, 9/27/2006.

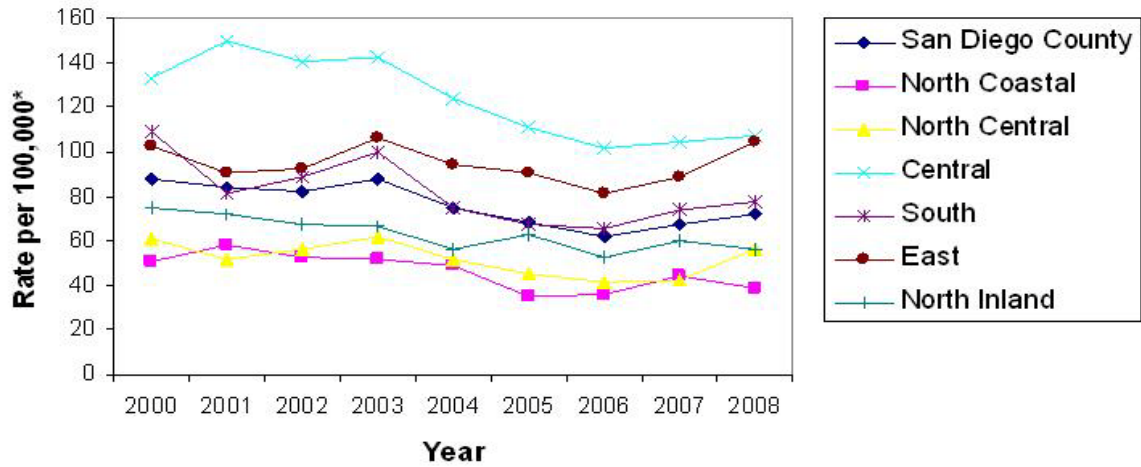
‡ Source: CDC, NCHS, Compressed Mortality Files. On-line database accessed 4/15/2009: <http://wonder.cdc.gov/cmf-icd10.html>

- The County age-adjusted asthma death rate decreased only slightly between 2001 and 2004, before increasing again in 2005 and 2006. It has been comparable to the age-adjusted rates for the U.S. and California since 2000.



- From 2000-2008, the highest asthma hospitalization rate occurred in 2003, while the lowest was in 2006.

Asthma Hospitalization: Actual Rates* per 100,000 in San Diego County Regions, 2000-2008

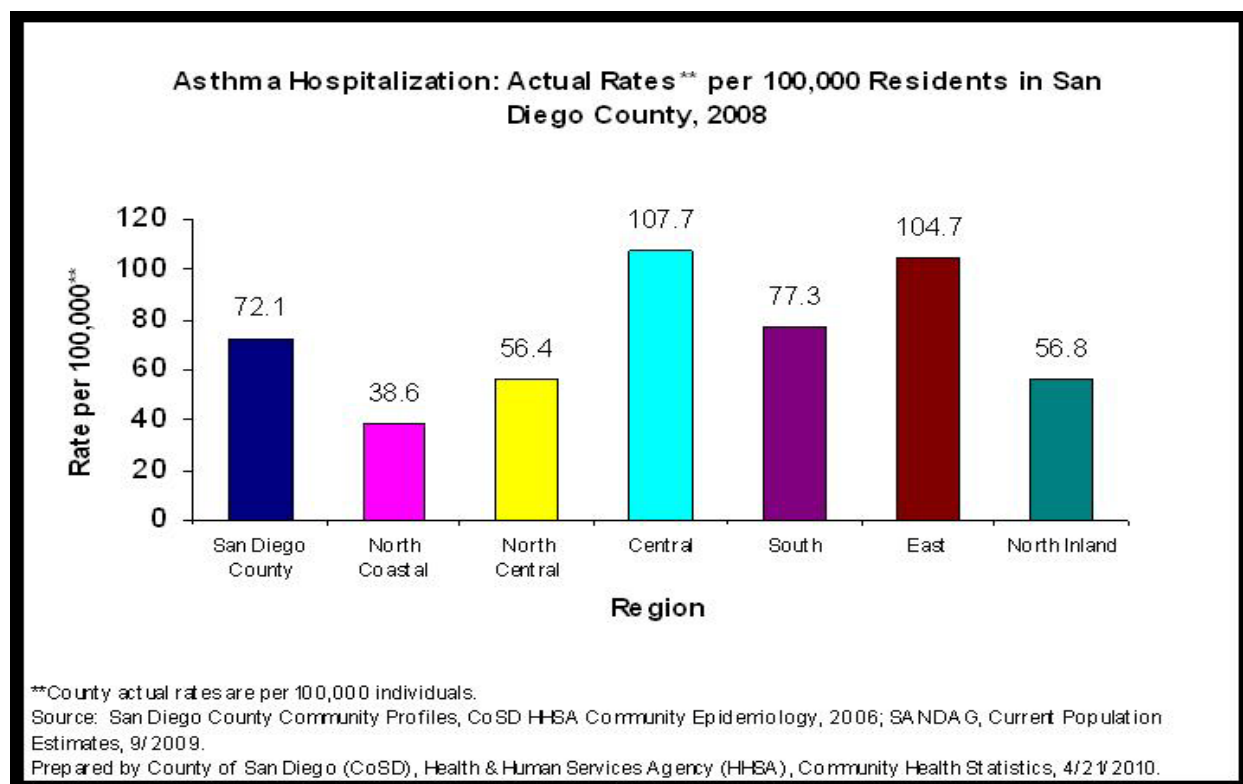


*County actual rates are per 100,000 individuals.

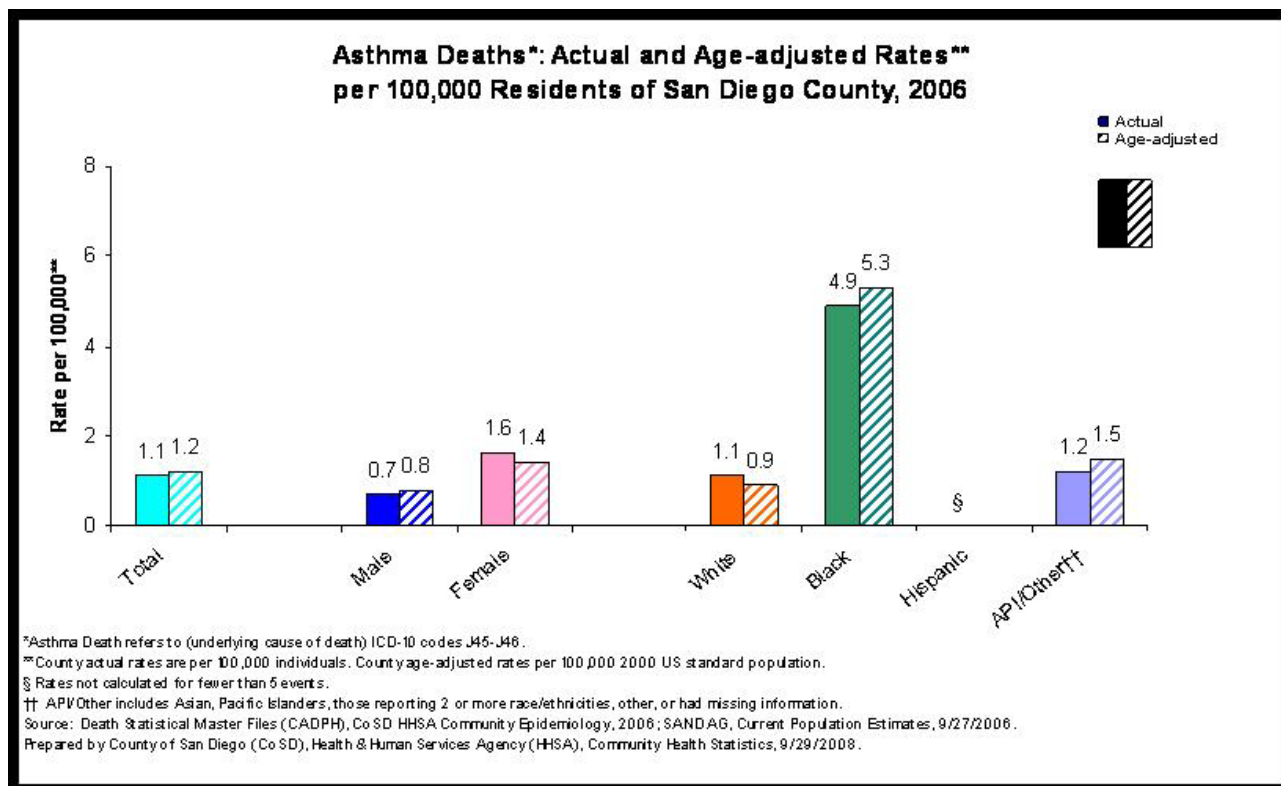
Source: San Diego County Community Profiles, CoSD HSA Community Epidemiology, 2009.

Prepared by County of San Diego (CoSD), Health & Human Services Agency (HSA), Community Health Statistics, 4/21/2010.

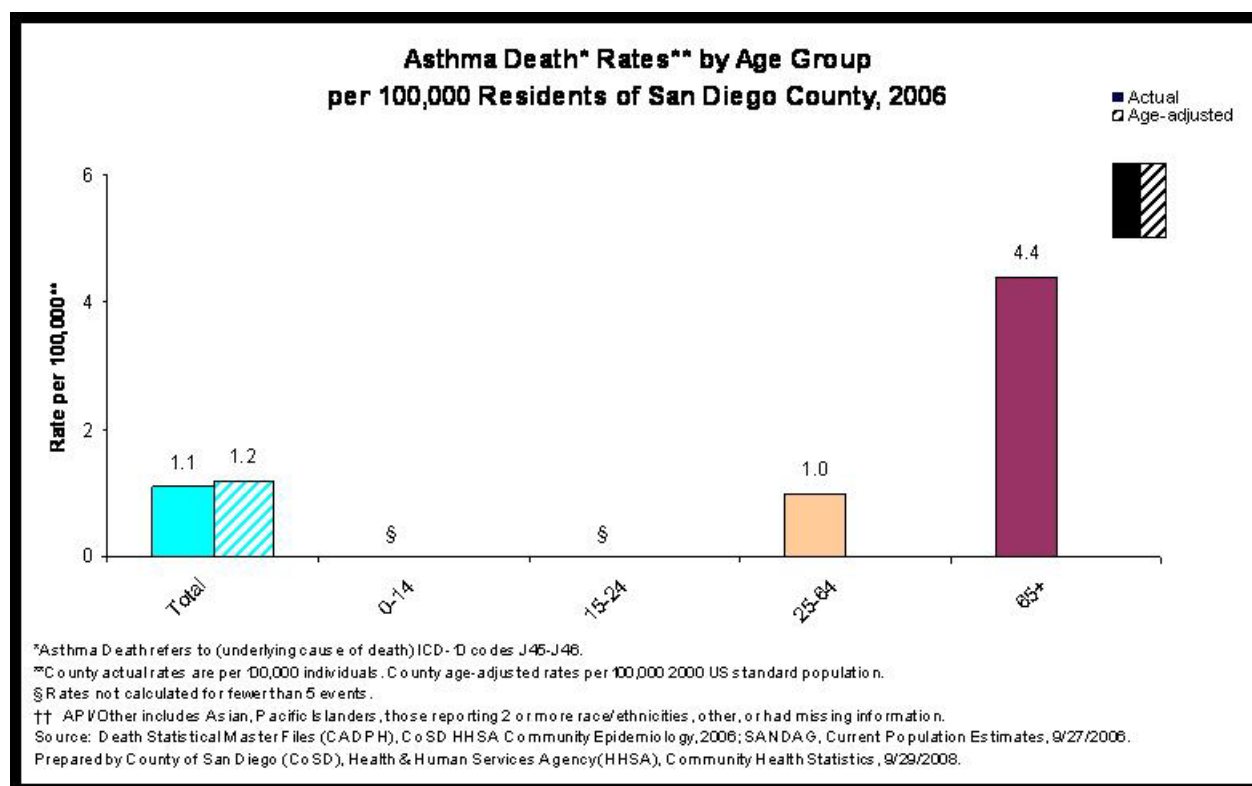
- From 2000-2008, most regions of San Diego County had a decrease in rates of asthma hospitalizations, except East region which ended with a slight increase.



- In 2008, the Central region of San Diego County had the highest asthma hospitalization rate, while the North Coastal region had the lowest rate.



- The total age-adjusted death rate in San Diego County was 1.2 per 100,000 residents in 2006.
- The age-adjusted death rate from asthma was almost twice as high for women as for men (1.4 per 100,000 female residents vs. 0.8 per 100,000 male residents).
- By race/ethnicity, black residents of San Diego County had a death rate of 5.3 per 100,000; more than 5 times higher than white residents.



- Asthma deaths were most frequent among residents aged 65+ years (4.4 per 100,000).

Asthma and Its Complications: Prevention for Individuals

- Quit smoking, and avoid secondhand smoke exposure
- Clean house and bedding weekly
- Keep pets outside
- Store food in airtight containers
- Dry damp or wet things completely
- Monitor the AQI (Air Quality Index)
- In 2008, the Central region of San Diego County had the highest asthma hospitalization rate, while the North Coastal region had the lowest.

Warning signs for children:

- Coughing at night
- Has the cold or the flu
- Has a fever
- Stuffy or runny nose

- Tickle in the throat
- Sneezes and has watery eyes
- Tightness in the chest
- Feels weak or tired
- Has headaches
- Restless
- Face is pale
- Dark circles under the eyes

Treatment for Asthma

- Controllers (anti-inflammatory medicines)
- Quick relief/emergency (bronchodilators)

Prevention Tools for Public Health Professionals: Asthma Critical Pathway

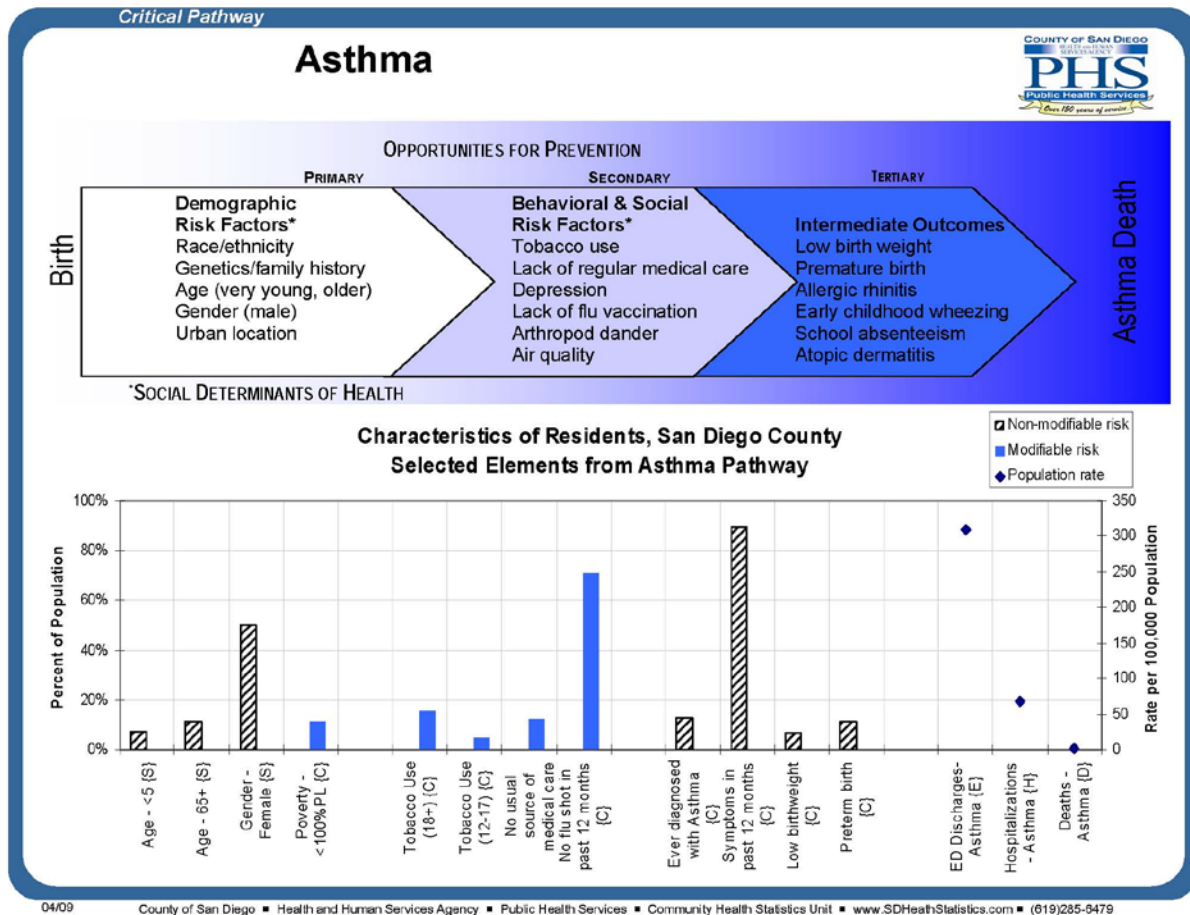
There are many opportunities for public health professionals in the community to help reduce the risk of asthma and to improve the health outcomes of individuals who already have the disease. To assist in community health efforts, an *Asthma Critical Pathway* was developed.

The *Asthma Critical Pathway* is a tool to be used in health promotion and disease prevention efforts. Its purpose is to identify populations at greater risk for asthma, and to identify prevention and early intervention opportunities. The *Asthma Critical Pathway* displays a diagram of the major risk factors, and intermediate outcomes or related diseases that have an impact on, or result from, asthma. Risk factors are marked as non-modifiable (black striped bars) such as race/ethnicity or gender and modifiable (solid colored bars) such as physical activity or high blood pressure.

Beneath the risk factors diagram is a data grid describing the San Diego resident population in relation to selected elements of the pathway. The data grid is designed to assist in quick identification of opportunities for interventions that might have a high impact on a particular disease. The data represent all San Diegans, not only those with a particular disease. The left axis (bar) indicates the percent of the population with a known risk factor or intermediate outcome. The right axis (diamond) indicates the rate of a particular medical encounter within the population that is specified. The data are described fully described fully in the complete version of the *Critical Pathways*.¹⁵

In addition, the Community Health Statistics Unit website (www.SDHealthStatistics.com) provides detailed demographic, health and facility data including maps of geographically formatted health data. Also available are links to other County data sources, state and national sites of interest. For further assistance with data or interpretation, please contact the Community Health Statistics Unit.

Asthma Critical Pathway to Disease.



Data Sources

- Centers for Disease Control and Prevention. You Can Control Your Asthma. Environmental Hazards and Health Effects Program.
- United States Environmental Protection Agency. Indoor Environments Division, Office of Air and Radiation (6609J). Asthma Facts. EPA-402-F-019, February, 2010. http://www.epa.gov/asthma/pdfs/asthma_fact_sheet_en.pdf. Accessed April 21, 2010.
- Office of Public Health Genomics, Centers for Disease Control and Prevention. Evidence of a genetic component to asthma. <http://www.cdc.gov/genomics/training/perspectives/asthma.html#Evidence>. Accessed March 14, 2009.
- Asthma and Allergy Foundation of America. Asthma Facts and Figures. <http://www.aafa.org/display.cfm?id=9&sub=30>. Accessed April 21, 2010.
- Brooks AM, Byrd RS, Weitzman M, Auinger P, McBride JT. (2001). Impact of low birth weight on early childhood asthma in the United States. Arch Pediatr Adolesc Med. 155:401-406.
- Seidman DS, Laor A, Gale R, Stevenson DK, Danon YL. (1991) Is low birth weight a risk factor for asthma during adolescence? Arch Dis Child. 66:584-587.
- Gauderman WJ, Avol E, Gilliland F, Vora H, Thomas D, Berhane K, McConnell R, Kuenzli N, Lurmann F, Rappaport E, Margolis H, Bates D, Peters J. (2004). The effect of air pollution on lung development from 10 to 18 years of age. N Engl J Med 351:1057-1067.

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- ⁸ McConnell R, Berhane K, Gilliland F, London SJ, Islam T, Gauderman WJ, Avol E, Margolis HG, Peters JM. (2002). Asthma in exercising children exposed to ozone: a cohort study. *Lancet* 359: 386-391.
- ⁹ Gilliland FD, Berhane K, Islam T, McConnell R, Gauderman WJ, Gilliland SS, Avole E, Peters JM. (2002). Obesity and the risk of newly diagnosed asthma in school-age children. *Am J Epidemiol* 158:406-415.
- ¹⁰ Correale CE, Walker C, Murphy L, Craig TJ. (1999). Atopic dermatitis: a review of diagnosis and treatment. *AAFP*:1191-1209.
- ¹¹ Pawankar R. (2004). Allergic rhinitis and asthma: the link, the new ARIA classification and global approaches to treatment. *Curr Opin Allergy Clin Immunol* 4:1-4.
- ¹² Moyer, P. Prematurity, low birthweight are more likely with maternal asthma. (2006). *Medscape Medical News*.
- ¹³ Akinbami, LJ. Asthma prevalence, health care use and mortality: United States 2003-2005. <http://www.cdc.gov/nchs/products/pubs/pubd/hestats/ashtma03-05/asthma03-05.htm>. Accessed April 21, 2010 .
- ¹⁴ California Health Interview Survey. San Diego: Asthma. AskCHIS. University of California, Los Angeles, Center for Health Policy Research. Los Angeles, CA.
- ¹⁵ County of San Diego Health and Human Services Agency, Public Health Services. Community Health Statistics Unit. (2009). Critical Pathways: the Disease Continuum, Coronary Heart Disease. April, 2009. <http://www.sdcountry.ca.gov/hhsa/programs/phs/documents/CHS-CriticalPathwaysofDisease7-3-09.pdf>. Critical Pathways. Accessed July 16, 2009.